

# Torre de Hanói

Fórmula movimientos mínimos:  $T(n) = 2 \cdot T(n-1) + 1$

$$T(n) = 2T(n-1) + 1$$

$$2^1 T(n-1) = 2^2 T(n-2) + 2^1$$

$$2^2 T(n-2) = 2^3 T(n-3) + 2^2$$

$$2^3 T(n-3) = 2^4 T(n-4) + 2^3$$

↓

$$2^{l-1} T(n-(l-1)) = 2^l T(n-l) + 2^{l-1}$$

$$T(n) = \sum_{i=0}^{n-1} 2^i$$

$$\sum_{i=0}^{n-1} 2^i + 2^n = 1 + \sum_{i=0}^{n-1} 2^{i+1}$$

$$\sum_{i=0}^{n-1} 2^i + 2^n = 1 + \sum_{i=0}^{n-1} 2^i \cdot 2$$

$$\sum_{i=0}^{n-1} 2^i + 2^n = 1 + 2 \cdot \sum_{i=0}^{n-1} 2^i$$

$$2^n = 1 + \sum_{i=0}^{n-1} 2^i$$

$$\sum_{i=0}^{n-1} 2^i = 2^n - 1$$

$$T(n) = \sum_{i=0}^{n-1} 2^i \rightarrow$$

$$T(n) = 2^n - 1$$